

# Allergy/Anaphylaxis #1

**PEARLS for Allergy/Anaphylaxis:** - Anaphylaxis is an acute illness with involvement of the skin, mucosal tissue or both with at least one of the following: 1) respiratory compromise, 2) reduced BP or associated symptoms of end organ dysfunction.

## EMT

1. Manage airway as appropriate
2. If anaphylaxis identified, assist administration of patient's own adult or pediatric (as applicable) epinephrine auto-injector in the anterolateral thigh if the service is authorized and the personnel so trained
3. If shock present, refer to medical shock protocol "Gold 13"
4. Request ALS if available
5. Consider local measures to prevent absorption

## ADVANCED EMT

6. IV en route
7. Cardiac monitor
8. If shock present, perform fluid bolus
9. If anaphylaxis identified:
  - a. Adult: Epinephrine 0.3 mg, 1:1,000 IM in anterolateral thigh, or
  - b. Pediatric dose of epinephrine which is as follows: < 25 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 25 kg, 0.3 mg IM (0.3 ml of 1:1,000) IM in anterolateral thigh

In both cases, use of an auto injector is preferable when available

10. Contact OLMC for option of Albuterol 2.5 mg by nebulization; if wheezing 5-15 minutes after Epinephrine, Consider repeat times 1 as needed or nebulizer of 5 ml of 1:1,000 Epinephrine
  11. In patients with refractory anaphylaxis, ask OLMC for option to repeat Epinephrine, at above doses, every 5-15 minutes as needed
- For patients with minor symptoms only or resolution of symptoms with a single dose of epinephrine, the AEMT, in consultation with OLMC, may modify the Paramedic response as appropriate. Otherwise, call for ALS.

## CRITICAL CARE / PARAMEDIC

11. Diphenhydramine (Benadryl)
  - a. Adult: 25-50 mg IV/IO/IM
  - b. Pediatric: 1-2 mg/kg IV/IO/IM
12. If wheezing 5-15 minutes after Epinephrine, Albuterol 2.5 mg by nebulization; Consider repeat times 1 as needed or nebulizer of 5 ml of 1:1,000 Epinephrine



## Allergy/Anaphylaxis #2

### 14. Methylprednisolone (Solu-Medrol):

- a. Adult: 125 mg IV
- b. Pediatric: 2mg/kg IV, to a maximum dose of 125 mg IV
- c. Consider glucagon 1 mg IV q 5 minutes for patients taking beta-blockers



### 15. Contact OLMC for repeat IM Epinephrine every 5 minutes and/or IV DRIP of epinephrine for shock or cardiovascular compromise, which may typically be dosed the following way:

**Preparation** - Add 1ml (1mg) epinephrine 1mg/ml (1:1000) to 250 ml bag NS. This results in a 1 mg/250 ml = 4 mcg/ml mix.

**Dose** - Start at 0.05 mcg/kg/min. Titrate by 0.05 mcg/kg/min every 5 min. Titrate to desired blood pressure.

**Usual dose** is 0.05-0.5 mcg/kg/min. Absolute maximum dose is 0.5 mcg/kg/min

**This must be performed under OLMC and only with a pump.**

### PEARLS for Allergy/Anaphylaxis:

- 1) Anaphylaxis is an acute illness with involvement of the skin, mucosal tissue or both with at least one of the following: 1) respiratory compromise, 2) reduced BP or associated symptoms of end organ dysfunction.
- 2) In every case when anaphylaxis is identified, epinephrine should be provided. The best route of administration is via the IM route in the anterior, lateral thigh
- 3) Patients may require repeated doses of epinephrine. Typically, these repeated doses are also provided via the IM route.
- 4) Rarely, patients may require IV drip epinephrine. IV Epinephrine should be reserved for those patients in refractory and severe anaphylaxis with either cardiac arrest or severe hypotension despite repeated doses of IM Epinephrine.
- 5) When errors occur in epinephrine delivery, it is commonly due to providers falling to check that they are using the proper concentration of epinephrine. Be careful to recheck when using epinephrine and ensure that the desired concentration is being utilized.
- 6) Use an Epinephrine auto-injector when ever available.

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# Adult Coma #1

## (Decreased Level of Consciousness)

**Assess for trauma, drugs, diabetes, breath odor, needle tracks, medical alert tags suspected seizure. Refer to appropriate protocol for specific suspected conditions.**

### EMT

1. Immobilize spine if indicated
2. Manage airway as appropriate - See "Blue 3 & 5"
3. Request ALS if available
4. If shock present, refer to Medical Shock Protocol "Gold 11"
5. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

### ADVANCED EMT

6. IV en route
7. Cardiac monitor
8. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device
9. If blood glucose less than 60 mg/dL, refer to Diabetic/Hypoglycemic Protocol "Gold 5"
10. If respirations less than 12 per minute AND narcotic overdose suspected, refer to Antidotes for Specific Toxins: Opiates "Yellow 5"

### CRITICAL CARE / PARAMEDIC

11. Contact OLMC for the following OPTIONS:
  - a. Repeat dextrose
  - b. Repeat bolus of naloxone (*Narcan*) 0.1 – 2 mg IV/IO/ IM/IN



# Adult Diabetic/Hypoglycemic Emergencies

## EMT

1. Manage airway as appropriate
2. Request ALS if available
3. If patient is a known diabetic, has a known low blood sugar, or has an altered mental status, and if the patient is conscious and able to swallow, give glucose orally
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

**Glucose paste is to be administered as soon as possible in patients presenting with the signs/symptoms of diabetic emergency.**

## ADVANCED EMT

5. IV en route - Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device
6. Cardiac monitor
8. If blood glucose is less than 60 mg/dL,
  - a. If patient is conscious and able to swallow, give glucose orally
  - b. Dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.
  - c. If IV unavailable, DO NOT PLACE IO. Consider oral glucose. If not able to tolerate oral glucose:
    - i. Glucagon 1 mg IM.
9. If blood glucose greater than 300 mg/dL, give NS fluid bolus
10. Repeat Glucose measurement in 5 minutes

## CRITICAL CARE / PARAMEDIC

11. Contact OLMC for OPTION of repeating dextrose, repeating glucagon, or placing an IO - If IO placed, administer 250 ml of D10W via IO.

### PEARLS for Diabetes/Hypoglycemic Emergencies:

- 1) The definition of hypoglycemia has been changed from 80 mg/dl to 60 mg/dl based on current literature which suggests most patients will experience adrenergic symptoms under 60 mg/dl and CNS symptoms under 50 mg/dl. If a patient's finger stick glucose measurement is above 60 mg/dl and hypoglycemia remains a concern, contact OLMC for options of treatment.
- 2) Goal of fluid bolus in hyperglycemia is to treat hypotension/signs of hypoperfusion as well as decrease blood glucose to less than 300 mg/dl
- 3) Hypoglycemic patients on sulfonylurea class medications (including glipizide (Glucotrol), glyburide (Diabeta), etc.) may have refractory hypoglycemia and all require transport, glucose monitoring and hospital evaluation



# Adult Seizures #1

**PEARLS for Seizures:** - Most seizures are self-limited. Unless a specific underlying condition exists (i.e. diabetes with hypoglycemia), treatment of a seizure or multiple seizures with a total duration of less than 5 minutes should focus on patient protection and oxygenation.

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## EMT

1. Manage airway as appropriate See "Blue 3 & 5"
2. Left lateral recumbent position and protect patient from injury
3. Spinal immobilization if indicated See Spine Assessment Protocol "Green 6"
4. Request ALS if available
5. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

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## ADVANCED EMT

6. Cardiac monitor
7. IV en route - Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device
8. If blood glucose less than 60 mg/dL, refer to page 44 Diabetic/Hypoglycemic Protocol "Gold 5"
9. If shock present, refer to page 50 Medical Shock Protocol "Gold 11"

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## CRITICAL CARE / PARAMEDIC

10. If the patient has a single seizure lasting greater than 5 minutes OR status epilepticus,
  - a. Midazolam (Versed) 5 mg IV / IO
    - i. If IV or IO cannot be established, Midazolam (Versed) 10 mg IM.
  - b. If Seizures continue, repeat Midazolam (Versed) 5 mg IV/IO/IM Q 5 min until resolution of seizure, or a total of 3 doses of Midazolam (Versed) have been provided
    - i. Contact OLMC if additional Midazolam (Versed) necessary
    - ii. Monitor oxygenation and ventilation with O2 saturation and ETCO2, especially if providing repeated doses of Midazolam (Versed).
    - iii. Manage the patient's airway as necessary
11. For patients visibly pregnant or less than 2 weeks post part
  - a. Magnesium sulfate 4 gm IV / IO over 10 minutes
    - i. If IV/IO not available, magnesium sulfate 8 gm IM (4 gm in each buttock)

## Adult Seizures #2



12. Contact OLMC for the following OPTIONS:

- a. If repeated doses of Midazolam (Versed) are necessary or provided therapy is unable to stop seizure activity

### **PEARLS for Seizures:**

\* References for dosing of medications in seizures are in part from the article: \*Silbergleit, et al. "Intramuscular versus Intravenous Therapy for Status Epilepticus" , New England Journal of Medicine, Feb 16, 2012, Vol. 366, No. 7

\* Contact OLMC for any patient requiring 3 or more doses of Midazolam, independent of the route provided

\* For patients with Vagus Nerve Stimulators who are having repeated/ continuous seizure activity, consider activation of the Vagus Nerve Stimulator, if not already attempted, by holding the patient's handheld magnet over the Vagus Nerve Stimulator.

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# Acute Stroke #1

Stroke should be suspected if any of the following have appeared in the last few hours or days: weakness or numbness on one side of face, arm or leg, abnormal speech (slurred, incoherent, absent).

**Refer to the next page for early hospital notification process for patients who are potential stroke patients.**

See Adult Coma "Gold 3" if warranted

See Diabetic Emergencies "Gold 5" if warranted

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## EMT

1. Manage airway as appropriate See Blue 3 & 5
2. Request ALS if available
3. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.

## ADVANCED EMT/CRITICAL CARE / PARAMEDIC

4. Cardiac monitor
5. IV en route. Draw blood as IV established or do a finger stick, to measure blood glucose using MEMS approved technique/device.
6. If blood glucose is greater than 60 mg/dl, proceed to next step.
  - b. If blood glucose is less than 60 mg/dL treat per MEMS protocols.  
Recheck the blood glucose in 5 minutes and, if it is greater than 60 mg/dL, repeat the *Cincinnati Prehospital Stroke Scale*, if it is positive (1 or more positives) proceed to next step.
7. Perform the Cincinnati Prehospital Stroke Scale and assess mental status. If any element is abnormal, proceed to next step
  - a. *Cincinnati Prehospital Stroke Scale*:
    - i. **Speech:** Have pt. state "You can't teach an old dog new tricks"
      1. Abnormal = wrong word, slurred, or absent speech
    - ii. **Facial droop** when asked to show teeth or smile
      1. Abnormal = one side does not move as well as other
    - iii. **Motor:** Have patient close eyes and hold out both arms
      1. Abnormal = arm cannot move or drifts down when held out
  - b. Also assess **Level of consciousness**
    - i. Abnormal = lethargic, stuporous, comatose

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## Acute Stroke #2

### Acute Stroke

8. Determine time of "Last Seen Normal."
- Get history from the patient and all available bystanders
  - "Time Last Seen Normal" starts with the onset of first symptoms or, if the symptoms improved or went away, the time the symptoms returned or got worse again.
  - Make sure to record contact information (cell phone, number etc.) for the individual able to identify the exact time when the patient was last asymptomatic
9. As early as possible, alert the receiving hospital of incoming stroke patient
- Relay the following information:
    - Patient age and gender
    - Identify the patient as a potential stroke patient
    - The patient's neurologic deficits and the findings of the *Cincinnati Pre-hospital Stroke Scale*
    - The "Time Last Seen Normal"
    - The patient's mental status
    - The patient's vital signs and finger stick blood glucose results
    - ETA

#### PEARLS for Stroke:

- \* From the Stroke Neurologist, Dr. Jane Morris - "Stroke should be suspected whenever a person has a sudden change in neurological function. More common symptoms of stroke are weakness or loss of sensation of the face, a limb or a side of the face and body, abnormal speech production (slurred or inappropriate use of words) or comprehension, dizziness/vertigo, uncoordinated movements of a limb, gait disturbance, loss of vision in one eye or one side of vision, sudden onset severe headache for no obvious reason."
- \* Once stroke is suspected, consider elevation of the head of bed to 30 degrees, if possible.



## Acute Stroke #3

### Stroke Checklist

Time of symptom onset/Time Last Seen Normal: \_\_\_\_\_

Yes No

- |                          |                          |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | History of intracranial hemorrhage?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Known arteriovenous malformation, neoplasm, aneurysm or bleeding diathesis?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Witnessed seizure at stroke onset?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Active internal bleeding or acute trauma (fracture)?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Intracranial or intraspinal surgery, serious head trauma, or previous stroke within the past 3 months?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Current use of warfarin (Coumadin), dabigatran (Pradaxa), rivaroxaban (Xarelto) or apixaban (Eliquis) or received heparin within the last 48 hours? |
| <input type="checkbox"/> | <input type="checkbox"/> | Arterial puncture at a noncompressible site within past 7 days?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Intracranial or spinal surgery, traumatic SDH, or MI in the last 3 mo   |
| <input type="checkbox"/> | <input type="checkbox"/> | Significant head trauma or stroke within the last 3 months  |
| <input type="checkbox"/> | <input type="checkbox"/> | Surgery or biopsy of parenchymal organ within 30 days   |
| <input type="checkbox"/> | <input type="checkbox"/> | Active internal bleeding in the last 21 days  |
| <input type="checkbox"/> | <input type="checkbox"/> | Minor procedure or arterial puncture at a non-compressible site in the last 7 days  |
| <input type="checkbox"/> | <input type="checkbox"/> | Patient or family refused/Patient is CMO  |
| <input type="checkbox"/> | <input type="checkbox"/> | Known pregnancy   |
| <input type="checkbox"/> | <input type="checkbox"/> | Seizure at onset with postictal residual neurological impairments   |
| <input type="checkbox"/> | <input type="checkbox"/> | GI or urinary tract hemorrhage within previous 21 days  |
| <input type="checkbox"/> | <input type="checkbox"/> | Major surgery or serious trauma in the past 14 days   |

# Adult Medical Shock #1

See Cardiogenic Shock "Red 21" if appropriate

See Hypovolemic Shock "Green 11" if appropriate

See Allergy and Anaphylaxis "Gold 1" if appropriate

See Adult Airway Algorithm "Blue 3" if appropriate

Definition of Severe Inflammatory Response Syndrome (SIRS), Sepsis, Severe Sepsis and Septic Shock		
Variable	Definition	
SIRS	Greater than or equal to 2 of the following	Temp > 38.3°C or < 36°C HR > 90 bpm Respiratory rate > 20 bpm Hyperglycemia > 120 mg/dl <sup>1</sup> Altered Level of Consciousness Decreased capillary refill Lactate > 2 mmol/L
Sepsis	SIRS + a presumed or identified source of infection	
Severe Sepsis	Sepsis + one or more organ dysfunction <sup>2</sup> , hypotension before fluid challenge, or Lactate > 4 mmol/L	
Septic Shock	Severe sepsis + hypotension <sup>3</sup> despite fluid bolus	
Table adopted from 2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference.		
<sup>1</sup> Hyperglycemia without history of diabetes, Hypoglycemia, without diabetes, in an immunocompromised patient increases suspicion of infection.		
<sup>2</sup> Organ dysfunction can be defined as: respiratory failure, acute renal failure, acute liver failure, coagulopathy, or thrombocytopenia. Laboratories that will suggest organ dysfunction include: PaO <sub>2</sub> (mmHg)/FiO <sub>2</sub> <300, Creatinine >2.0 mg/dl OR Creatinine Increase >0.5 mg/dL, INR >1.5, PTT >60 sec, Platelets < 100,000/uL. Total bilirubin >4 mg/dL		
<sup>3</sup> Systolic Blood Pressure < 90 mmHg or Mean Arterial Pressure < 65 mmHg		

## EMT

1. Attempt to identify cause (i.e. allergic reaction)
2. Manage airway as appropriate. See Blue 3
3. Request ALS intercept
4. Transport

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## Adult Medical Shock #2

### ADVANCED EMT/CRITICAL CARE/PARAMEDIC

#### 5. Consider causes

- a. Massive GI bleed, vaginal bleeding, vomiting, diarrhea, ruptured aneurysm - Treat per Hypovolemic Shock Protocol
- b. Cardiogenic Shock Protocol
- c. Anaphylaxis Protocol
- d. Severe Sepsis
  - i. Assess for acute pulmonary edema. If present, refer to cardiogenic shock "Red 21"
  - ii. Administer up to 30 cc/kg NS bolus. Monitor closely during resuscitation. Goals of resuscitation in shock and sepsis are to treat hypotension or signs of hypoperfusion.
  - iii. If point of care Lactate Monitor available, perform lactate. Communicate findings with receiving hospital
  - iv. Notify receiving hospital of incoming septic patient

### CRITICAL CARE / PARAMEDIC

#### 6. For medical shock or presumed septic shock

- a. If no response to initial 30 cc/kg fluid bolus:
  - i. Contact medical control to discuss additional fluid bolus versus initiating norepinephrine infusion. Norepinephrine infusions in adults and pediatrics must be administered via a Maine EMS approved medication pump.
    - A. Preparation** - mix NOREPINEphrine 8 mg in 250 ml NS.
    - B. Dosing** - Starting dose is NOREPINEphrine 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual max dose is 0.6 mcg/kg/min. Absolute max dose is 3 mcg/kg/min.
    - C. Titrate** to maintain SBP greater than 90 mm Hg

#### 7. Additionally, if the patient is found to have Adrenal Insufficiency (via medic alert bracelet, patient records, or family/staff reports), administer methylprednisolone (Solu-Medrol) as follows:

- a. Adults - methylprednisolone (Solu-Medrol) 125 mg IV, IM, or IO x 1 dose
- b. Alternatively, if the patient provides their own supply of hydrocortisone (Solucortef) AND they are able to communicate their dose of medication, this may be provided INSTEAD of methyprednisolone (Solu-Medrol) x 1 dose



# Adult Abdominal Pain

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Many diseases cause abdominal pain. While it is almost impossible to diagnose the cause of abdominal pain in the EMS environment, it is important to be prepared for the patient to suddenly become very ill. If the patient is in shock, refer to the medical shock protocol Gold 11.

## **EMT**

1. Manage airway as appropriate. See Blue 3
2. If evidence of shock, refer to page 50 Medical Shock "Gold 13"

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## **ADVANCED EMT**

3. Establish IV
4. Perform 12-lead EKG (If so trained) under the following circumstances: 1) The patient has a history of cardiac disease or risk factors for cardiac disease, or 2) based on the provider's discretion.

## **CRITICAL CARE / PARAMEDIC**

5. Perform pain-rating score on 1-10 scale
6. For non-traumatic abdominal pain in a stable patient with a normal level of consciousness:
  - a. If appropriate, administer fentanyl 1 microgram/kg IV or IN for a maximum dose of 100 microgram.
    - i. If repeated doses necessary, contact OLMC
  - b. For nausea or vomiting, refer to Nausea and Vomiting protocol "Gold 14"

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# Adult Nausea and Vomiting

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Nausea and vomiting are symptoms of some other illness. Therefore, this is a supplemental protocol to be used in addition to other relevant protocols

## EMT

1. Transport in position of comfort

## ADVANCED EMT

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2. Perform 12-lead EKG (if so trained) under the following circumstances: 1) The patient has a history of cardiac disease or risk factors for cardiac disease, or 2) based on the provider's discretion.
3. Establish IV Access
4. Consider fluid bolus if active vomiting

## CRITICAL CARE / PARAMEDIC

5. Adults, administer ondansetron (Zofran) 4 mg IV or ondansetron (Zofran) 4 mg ODT tablet
  - a. May repeat once after 15 minutes as needed.
6. For Pediatric Patients, refer to Pediatric Nausea and Vomiting Protocol "Pink 2"

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Contact Online Medical Control for dosage question, abnormal vital signs, or coincident drug use (including alcohol) by patient.

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## PEARLS for Management of Nausea and Vomiting:

\* A small percentage of patients receiving ondansetron experience cardiac adverse reactions including QT prolongation. For this reason, patients should be questioned about preexisting QT prolongation, which is a contraindication to receiving ondansetron. In these conditions, patients SHOULD NOT receive ondansetron.

